

Order No. 9900.00.33GB01

Operating Instruction

***Rotary Harrows***

***MKE 250 (E), 300 (E)***

***MKE 301, 401***





## EC Declaration of Conformity

(Directive 89/392/EEC, Annex II, sub A)

We

***RABE Agrarsysteme GmbH+Co.KG***

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Am Rabewerk, D-49152 Bad Essen

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Declare under our sole responsibility, that the product

Rotary Harrow *MKE*

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is in conformity with the provisions of the following other EEC directives:

Directive 89/392/EEC  
93/44/EEC and 93/68/EEC, Annex I

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And furthermore declares that the following harmonized standards have been applied:

EN 292-1 and EN 292-2

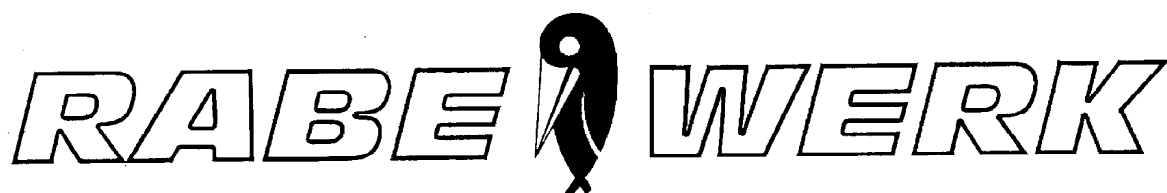
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Bad Essen,

07.11.2004

Wilhelm von Allwörden,  
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Head of Design



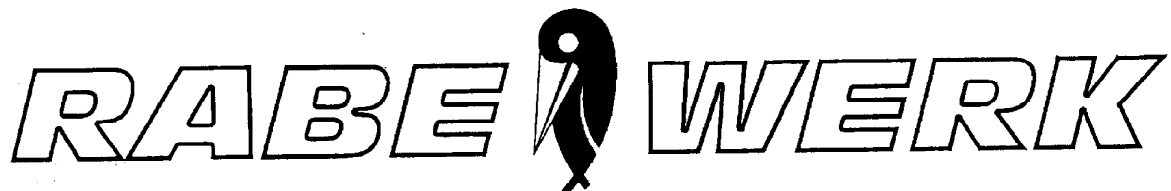
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No. 102-1-97 GB

## Rotary Harrows MKE

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## Operating Instruction

### FOR ROTARY HARROWS

#### M K E

##### Before use

Ensure operators have read, and are familiar with, the instructions contained in this manual, and the rotary harrow is not operated by untrained persons. The rotary harrow is a power-take-off driven implement for soil preparation and is designed for normal agricultural work. Use the rotary harrow only for the purpose for which it was designed and tested and in accordance with the instructions contained in this handbook.

**Warning.** Warranty will be invalid if the machine is improperly used, the indicated HP limits (Chart 1) are exceeded, or non - genuine parts are fitted.

**RABEWERK accept no liability for consequential damages of any kind.**



**Chart 1:** Technical specifications and (engine) horse power limits:  
(Alterations reserved)

(Alterations reserved)

Model	Work. width	Weight (kg) incl. rear packer roller			up to
	m	Bar-crumbler	Toothed roller		kW
		440 mm	440 mm	510 mm	(HP)
MKE 250	2,50	845	960	1055	95/130
MKE 300	3,00	950	1090	1205	105/140
MKE 301	3,00	955	1095	1210	
MKE 401	4,00	1290	1520	1685	

Only authorized and skilled Rabe dealer technicians, national distributors or our own factory service engineers are allowed to undertake repairs under warranty.

##### Safety precautions

**Warning.** Make certain that all guards, covers, warning labels and safety devices are correctly fitted and operative.

Ensure that the machine is standing on firm, level ground with the parking stand in lowered position and the work area is clear of bystanders.





## **Safety Guards**

According to UK legal safety standards the rotary harrow is equipped with special front, rear and side guards which are not shown in this manual. The rear roller on these machines acts as part of the guard. If for any reason it is operated without the roller, an extension to the original rear guard must be fitted.

### **Warning.**

All guards and safety devices must be kept in place and operative.



### **Preparing for Work** (Fig. 1)

Consult the tractor manufacturer's manual for instructions on mounting implements and safe working methods.

For mounting implements operate the tractor hydraulic lift in 'Position control'.

**Warning:** Never leave the tractor seat or carry out work unless the machine is fully lowered to the ground, the PTO - drive is disengaged, the gear shift is in neutral, the hand brake applied, the engine stopped and the ignition key removed.



The rotary harrow is suitable for attachment to tractors equipped with Cat. II (standard) or Cat. III (optional) three point linkage (1 Fig.A).

Position the tractor lower link couplers at the same height and connect rotary harrow. Secure the lower link pins with lynch pins. Fit the tractor top link and secure with pins and lynch pins, then attach the PTO. drive shaft to the tractor.

Make sure the Walterscheid QS lock fits tightly on the PTO. shaft. The QS lock is fully engaged if collar can be rotated freely. Refer to separate Walterscheid operating instructions attached to PTO. shaft.

In work the tractor top links should be positioned only slightly up towards the headstock of rotary harrow. The lower link arms of the tractor and the top link should be almost parallel to ensure quiet running of PTO. shaft.

Lift the rotary harrow until the knife tines are 10 - 20 cm above ground level and set the limit stop on the hydraulic lift control quadrant accordingly. Whenever the rotary harrow is lifted above that level the PTO. shaft should be disengaged.

Ensure that the oil level in the centre gearbox and the gear transmission are at the correct levels and that all bolts, nuts and fasteners are tightened.

### **Lower Link Mounting Arms** (Fig. 1)

To compensate for the length of the PTO. drive shaft or to attach the rotary harrow closer to the tractor, the mounting arms (1 Fig. A1) are adjustable in length.

By means of the floating action of the cross- shaft an uniform depth can be maintained during work.

### **PTO. Drive Shaft** (Fig. 2)

**Warning.** Use only the original supplied PTO. drive shaft and observe the detailed instructions in this manual and also the instructions attached to the PTO. shaft.



To adjust the length, hold the half-shafts next to each other in the shortest and longest working position and mark them. Shorten if necessary by cutting off the guard tubes and sliding profiles on each half-shaft by the same length. With the rotary harrow in lowered position (at max. working depth) the minimum overlap of the sliding profiles must be at least 200 mm (2 Fig. X).

Round off all sharp edges and remove burrs. Grease sliding profiles.

### **Warning.**



Attach restraining chains to the tractor and keep them fitted at all times during operation.

There is a holder (1 Fig. L) provided for the PTO shaft to rest when the machine is disconnected from the tractor.

### **Operation**

**Warning.** Never allow people to stand or sit on rotary harrow during operation.

Stay clear of operating area. Never touch any moving parts.  
Reverse tractor only when the rotary harrow is raised.



Before engaging the PTO. shaft and commencing cultivation ensure that:

- \* Engage or disengage the PTO shaft only if the rotary harrow is not lifted higher than 10 - 20 cm above the ground.
- \* Sufficient front wheel weights are fitted to compensate the rear mounted implement.
- \* The area of operation is clear of bystanders.
- \* The selected PTO. speed of tractor is in accordance with the permitted 1000 rpm. of the rotary harrow.
- \* The PTO. drive shaft tubes and sliding profiles do not separate at the longest working length, or jam at its shortest.

Adjust tractor linkage to level the rotary harrow laterally and longitudinally.  
The length of the topline determines whether the input shaft of the gearbox is in a level position horizontal wise to avoid strain on gearbox.

### **Side Plates** (Fig. 3)

The side plates (3 Fig. D) prevent soil ridges and must be adjusted according to the working depth. Before lifting the side plates up or down, loosen bolts (3 Fig. D1). The side plates should touch the ground with a maximum of 1 cm soil penetration.

### **Depth control** (Fig. 3)

The tillage depth is regulated by the pin adjustment (3 Fig. C).

### **Stone Protection Springs** (Optional) (Fig. 3)

The rotary harrow can be equipped with an unique floating spring system for stone protection, allowing the harrow to lift up and over large obstacles. In stoney ground the

action of the springs (3 Fig. C2) can increase flotation by tensioning them with the nuts until the depth control pins (3 Fig. C) begin to move away from the packer arms (3 Fig C1). Then slacken the springs until the pins (3 Fig. C) are only slightly in contact with the packer roller arms.

If the rotary harrow is operated with a mounted seed drill, the flotation springs (3 Fig. C2) need more tension.

### **Gear Set Options** (Chart 2)

By varying the rotor speed and/or the forward travel speed of the tractor, the optimum soil tilth can be achieved to produce a perfect seedbed in one pass. The lowest possible recommended speed should be used to achieve a satisfactory tilth.

**Caution.** High rotor speed causes higher wear on knifetines.

The forward speed of the tractor must not exceed approx. 8 km/h (5 mph).

MKE 250 and 300 models are fitted standard with a pair of green 15/22 change gears (15 teeth on input shaft). MKE 301 and 401 are fitted with blue gears 16/19. By means of fitting the pair of change gears vice versa a different rotor speed can be chosen or another set of gears must be obtained.

**Chart 2: Gear set options**

MKE	PTO	Set of gears: Colour and number of teeth												Input
		yellow		black		red		green		blue		white		
	12 23	23 12	13 22	22 13	14 21	21 14	15 20	20 15	16 19	19 16	17 18	18 17		
301 & 401	1000	178	---	202	---	228	---	257	456	288	406	323	362	Rotor  rpm.
	750	134	---	152	433	171	385	193	342	216	305	242	272	
	540	96	354	109	312	123	277	139	246	155	219	174	196	
MKE		12 25	25 12	---	---	14 23	23 14	15 22	22 15	16 21	21 16	17 20	20 17	Input
250 & 300	1000	230	---	---	---	292	---	327	---	367	---	408	---	Rotor  rpm.
	750	173	---	---	---	220	---	264	---	275	474	307	425	
	540	124	---	---	---	158	426	177	380	198	341	220	305	

### **Exchange of Change Gears** (Fig. 4)

Tilt rotary harrow forward by shortening the top link. Remove the cover plate (4 Fig. F) taking care not to damage the gasket nor the shaft seal. Fit gears with the figure (indicating the nos. of teeth) which is stamped on gear pointing to the gearbox cover plate.

The shoulder on the gears must point inwards to the gearbox housing (4 Fig. F1).

The number of teeth for both gears must prove always 35 in total.

A second set of gears (4 Fig. F1) can be stored in the gearbox housing unless equipped with a PTO- through drive.

The extra gear stored on the side of the pinion shaft must be secured by a collar (4 Fig. F3) and a rollpin. The second spare gear without.

**Note:** The gear in work on the input shaft must be kept in place with the spacer bush (4 Fig. F4) provided. This applies to machines equipped without a PTO through drive.

For machines with a PTO through drive there is a different bush provided (not pictured).

### **Rigid rear 3-point linkage** (Fig. 5)

For close attachment of secondary equipment such as seed drills the lower link arms (5 Fig. G) can be adjusted horizontally. The lower link arms (5 Fig. G) can be also fitted vice versa on the headstock to adapt from Cat. II to Cat. I linkage. The same must be done with

the link ends (5 Fig. G2). For lower link pins Cat. I on the secondary implement use bushes. To couple a secondary implement adjust the chains (5 Fig. G1) so that the lower link arms are low enough to hitch the implement and will raise high enough in the lift position. The chains (5 Fig. G1) should be slack in work to enable, for example, a seed drill to follow the ground contours independently. Secure the link ends (5 Fig. G) always with the safety pins (5 Fig. G4) provided. Adjust length of the topline (5 Fig. G5) to suit the attached implement.

#### **Lever Change Gearbox** (Fig. 6)

A lever change gearbox is available as an option. The gearbox provides the selection of 2 speeds and a neutral position. A standard set of change gears 16/21 (16 teeth on intermediate shaft) is fitted. Use high rotor speed of 400 and more only for shallow work and where there are no stones!

**Chart 3:** Speed options and rotor rpm.

M K E	P T O rpm.	Lever position	16	21	Interm. shaft
			21	16	Pinion shaft
301 & 401	1000	1	250	431	Rotor  rpm.
		2	311	----	
	750	1	188	324	
		2	233	403	
	540	1	135	233	
		2	168	290	

#### **Hydraulic DRILL-LIFT** (Fig. 7 & 8)

The DRILL LIFT enables the weight of the secondary implement to be transferred closer to the tractor when it is transported. In the raised position it is lifted over the top of the rotary harrow. The vertically fixed hitch arms (7 Fig. H) are adjustable in height and can be angled rearwards for more clearance.

Horizontal adjustment by hole positions (7 Fig. H1 & H2) of the mounting arms.

An adjustable top link (8 Fig. H3) is part of the standard specification.

For adaption from Ca II to Cat I follow procedure as described in previous chapter.

The safety locking plates (8 Fig. H4) must be fitted to secure the attached implement. In transport (raised position) the chain (8 Fig. H5) must be fixed in shortest position.

**Note:** A mounted seeddrill must be able to float independently from the rotary harrow. Therefore make sure that the tractor's hydraulic system always remains in the FLOAT POSITION during work and the spool valve is in Lower position. There is a hydraulic lift restricter available to fit when a PTO driven seed drill is carried in the Drill Lift.

#### **Rear PTO Through Drive**

The speed of the PTO through shaft (1 3/4" with 6 splines) is equal to the tractor's PTO speed and is always engaged.

#### **Front mounting of rotary harrow**

When the rotary harrow is fitted to the front of the tractor the rotary harrow is driven through its rear PTO- drive shaft. The front PTO of the tractor must be right hand turn (looking in travelling direction).

### **Oil Change** (Fig. 6 & 9)

Standard and lever change gearbox:

On new machine the first oil change must be carried out after approx. 50 hours of work:  
Drain the gearbox oil while it is still warm. Afterwards change oil every 500 hours or every second year.

Tilt rotary harrow forward to enable oil to be completely drained.

The drainplug is provided on

Standard gearboxes: (9 Fig. N)

Lever change gearbox: (6 Fig. N)

For refilling of standard gearbox remove rear cover of gearbox (4 Fig. F) or through breather.

Use correct type and quantity of oil (Chart 4), Check filling level with machine standing level.

Check oil level daily and re-fill if necessary up to top (max.) mark on dipstick.

Standard gearbox: By dipstick (9 Fig M). But do not screw dipstick in. Dip- in only up to thread.

Lever change gearbox: As above (6 Fig. M)

### **Gear trough** (Fig. 1)

The gear transmission in the gear trough is running in a permanent filling of liquid grease. Check level of grease periodically (weekly) when the grease is still warm.

Insert a tape measure or stick through plug (1 Fig. P). The level of grease should be approximately 2,5 cm from the bottom of the trough.

Older grease can become stiff. Approximately  $\frac{3}{4}$  Liter gearbox oil can be added per meter of working width.

Please take care of correct specifications as described in the following chart.

**Chart 4:** Lubrication

MKE	Gear trough		Central Gearbox		
	kg	Grease	Standard	Lever change	Gearbox oil
250	15	Sodium soaped Grade 000 (G 000 M-20)	7,0 Liter 5,5 Liter	5,0 Liter	Hypoid Oil SAE 90 API-GL-5 MIL-L-2105D
300	18				
301	18				
401	24				

### **Clod Bar** (Fig. 10)

Two adjusters (10 Fig. B 1) are limiting the working depth. Do not adjust the clod bar too deep that soil is bulldozed in front.

Clear clodbar 10 Fig. B) out of work in stoney conditions to avoid bending of clodbar and tine breaking.

### **Replacement of knife tines** (Fig. 12)

Worn, bent or broken knife tines should be replaced immediately.

When correctly fitted the knifetines are dragging rearwards in the direction of rotation (Fig. 12). The left hand turning rotors are fitted with two left hand tines, so as the right hand turning rotors with right hand tines.

Left hand blades can be recognised by the "L" stamped in the blade.

**Note:** Tighten knife tines retaining bolts to a torque of **250 Nm** by using a torque wrench. Fit them with the bolt head pointing to the bottom.  
When overtightened the bolts are stretched and may break.  
Under very abrasive conditions use RABID hard coated knifetines for a significantly longer working life.

### **Track Eradicators** (Fig. 11)

Adjust position according to wheel setting. For the rigid version there are splitpins 8 x 50 mm ( 11 Fig. U).

### **Parking** (Fig. 1 & 12)

Park the rotary harrow only on level ground. Whenever used with an transport device the stand on the drawbar must be dropped.

The PTO- shaft should be fixed in the special holder (1 Fig. L) provided on the headstock. If there is a seed drill carried in the drill - lift, lower the drill down on the ground.

### **Maintenance** (Fig. 1)

After the first working hour, check and re-tighten all hardware.

To tighten **fixing bolts of tines** use torque wrench at **250 Nm**.

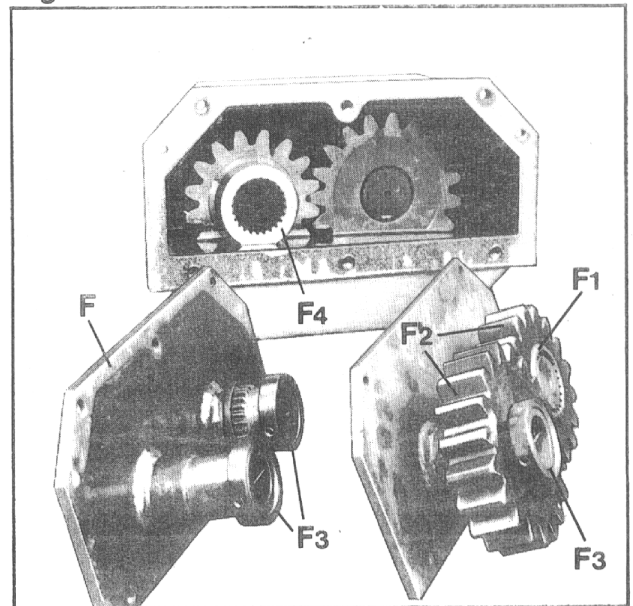
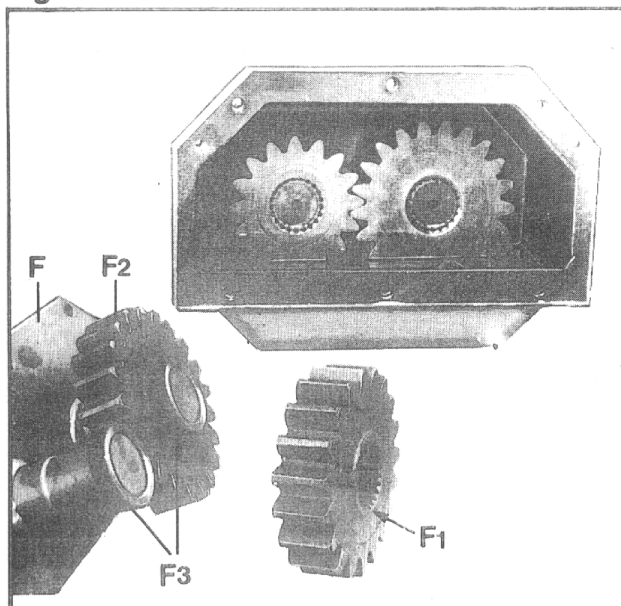
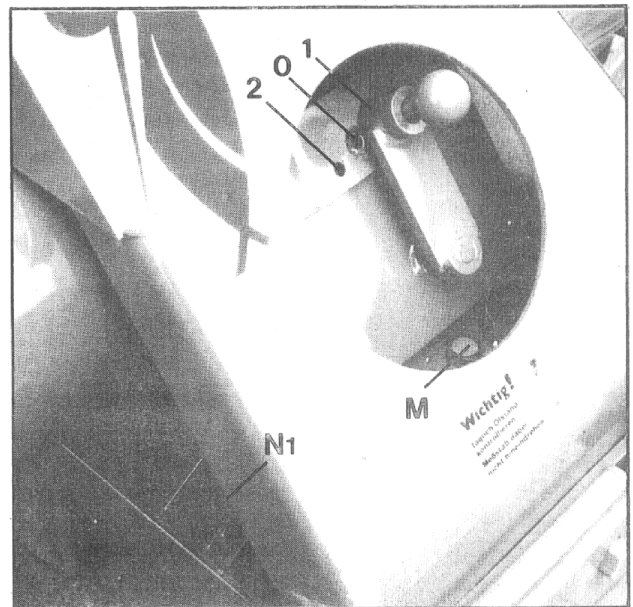
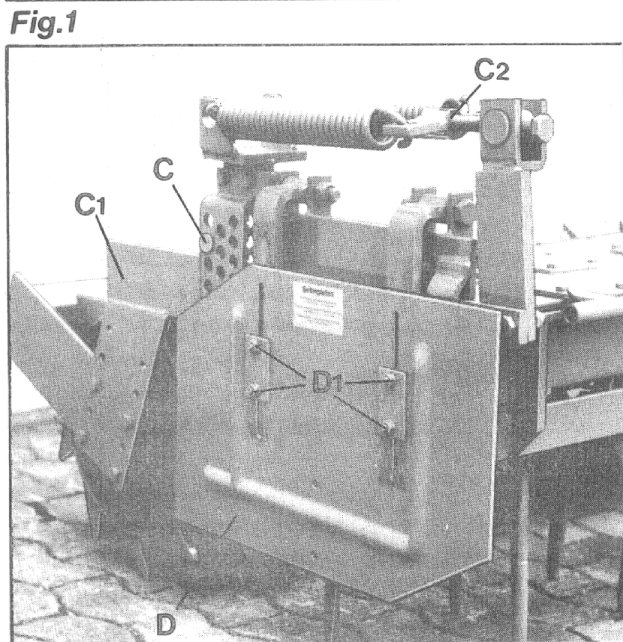
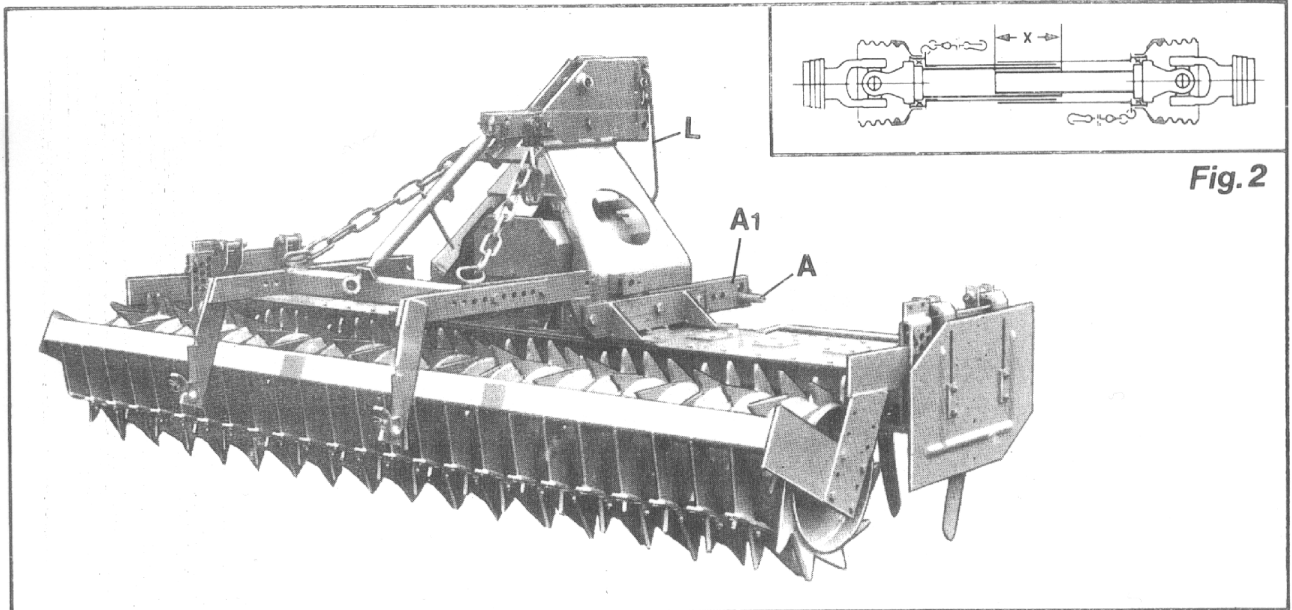
M 20 x 1,5 fixing bolts of headstock (1 Fig. R) with 650 Nm.

M 12 bolts on trough lid (1 Fig. R1) with 120 Nm.

Check oil level daily and re-fill if necessary up to top (max.) mark on dipstick.

Grease all grease nipples on packer roller, hydraulic Drill Lift and PTO. drive shaft. Adjust scrapers on toothed packer roller close to the roller if necessary. Ensure when tightening bolts that all scrapers remain adjacent to the roller.

The toothed roller should be cleaned and coated with oil after use.



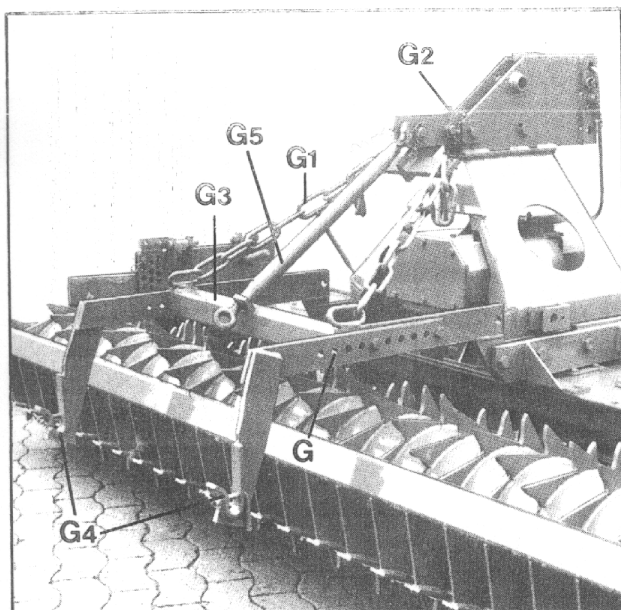


Fig.7

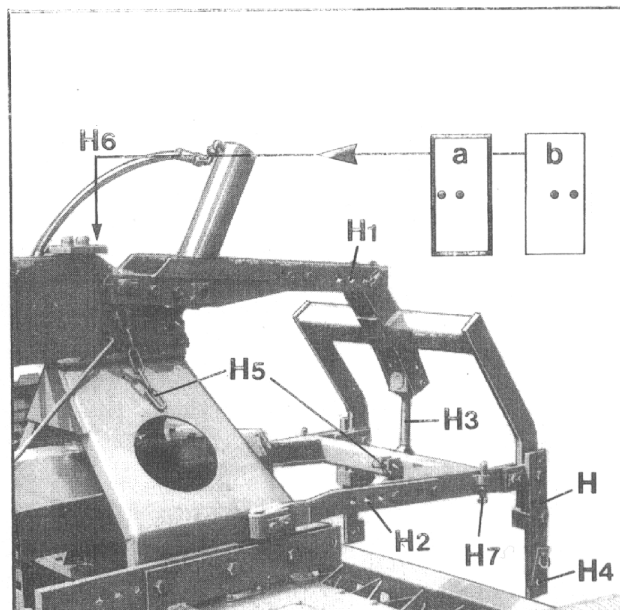


Fig.8

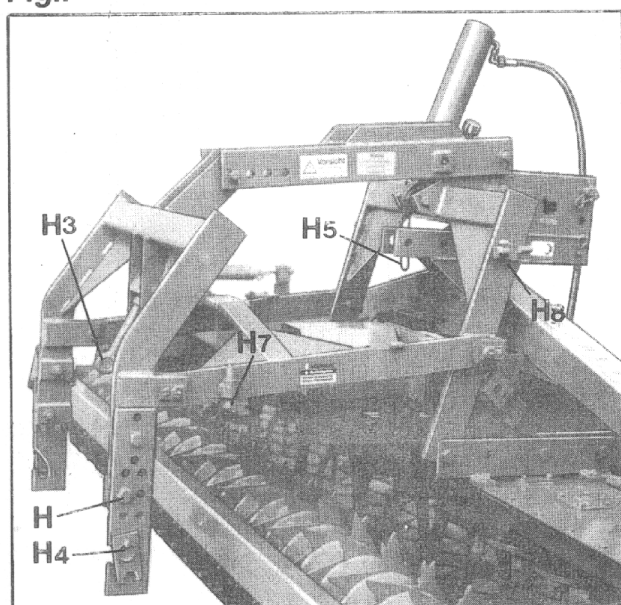


Fig.9

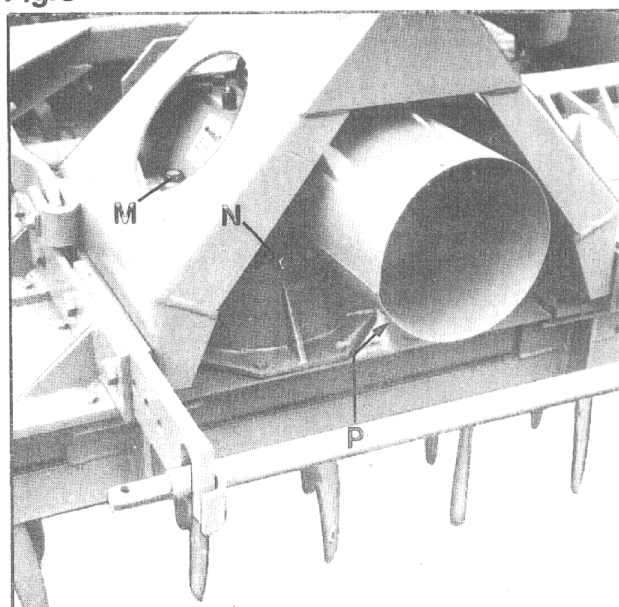


Fig.10

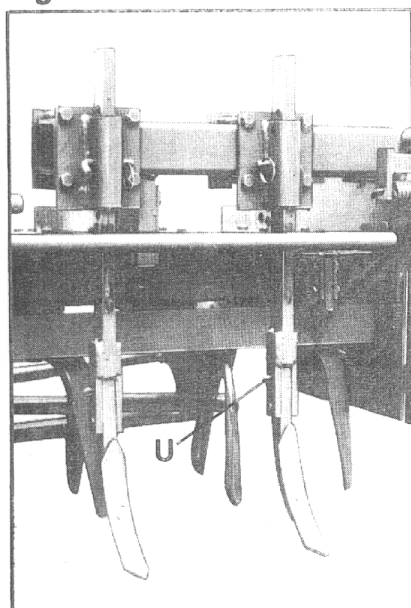


Fig.11

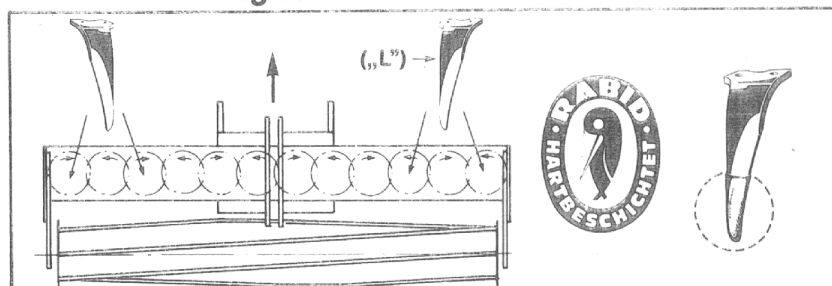


Fig.12

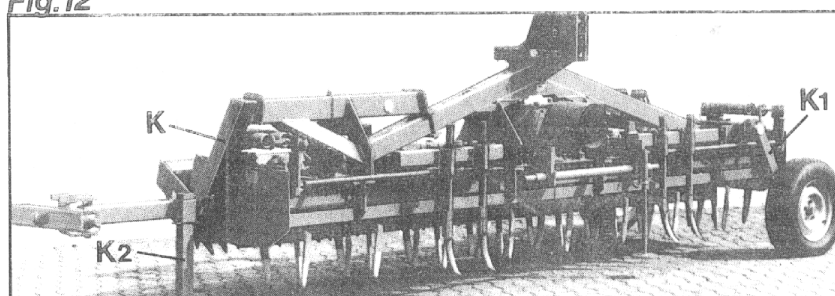


Fig.13



# WALTERSCHEID P.T.O. Drive Shaft

The maximum power input at 540 or 1000 PTO rpm has to be observed according to Chart 1.

Fit PTO shaft overload clutch to the machine. Not to the tractor. To ensure correct seating and play-free connection of the new QC Key-type clamp lock the locking procedure has to be carried out correctly to avoid serious damage. Refer to the Walterscheid Operating Instructions attached to the PTO shaft.

Loosen the hex. bolt (1/2 Fig. B) and turn locking ring clockwise allowing the PTO shaft to be fitted. The locking sleeve resumes its initial position after pushing the drive shaft onto the PTO shaft. **Tighten** the hex. bolt firmly to 50 Nm. **Replace** hex. bolt after repeated tightening and loosening.

**Length adjustment:** Try to obtain the greatest possible overlap. Min. overlap in working position (also to be maintained at max. depth of machine) is 20 cm (refer to Chart 1)

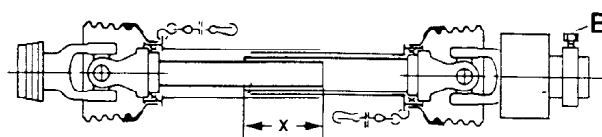


Fig. 1

Drive Shaft Type	Model Rotary Harrow	Tine / Bladerotor	Max. power Input kW (HP) PTO rpm		Min. overlap of sliding Profiles (Fig. 1 / X)
			540	1000	
2500	WMKE MKE PKE 250-350	LR R	80 (109)	123 (167)	20 cm
2600	PKE 400, 450 SKE 300-500	SR	-	189 (257)	20 cm
2600 Special	SKE 600	-	-	189 (257)	10 cm

Chart 1

A special (hub profile) shaft can be purchased if the min. overlap of 20 cm cannot be obtained (W 2600 - SD 35 Z - 610 - K 64/2R). Standard on SKE 600.

## Friction clutch for drive shaft types 2500 and 2600

The drive shaft is delivered with a standard torque setting (Nm) for 1000 rpm according to Chart 2. The torque setting of drive shaft type 2500 can be altered (2 Fig. E1).

Tighten nuts (2 Fig. E1) 'handtight' allowing springs (2 Fig. E) to be tightened without play. The number of turns are measured from that moment and must be adjusted evenly.

Drive Shaft Type	Torque Nm	Nut (Fig. 2/E1) No. of turns
2500	1500	2,5
2600	1800	-

Chart 2

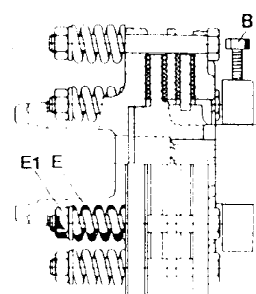


Fig. 2

### Friction clutch for drive shaft type 2600

The torque setting can be modified with the aid of a setting ring and two alternative location slots in the clutch housing.

1. The setting ring provides for a min. position and a max. position.
2. The clutch housing incorporates two (Fig. 3) locating positions for the setting ring (Pos. 1 and Pos. 2) which are situated at different levels.

For each power pack, four torque settings are possible (see Fig. 3 table).

The setting ring can only be removed in relieved condition which is obtained by tightening the nuts (3 Fig. E2).

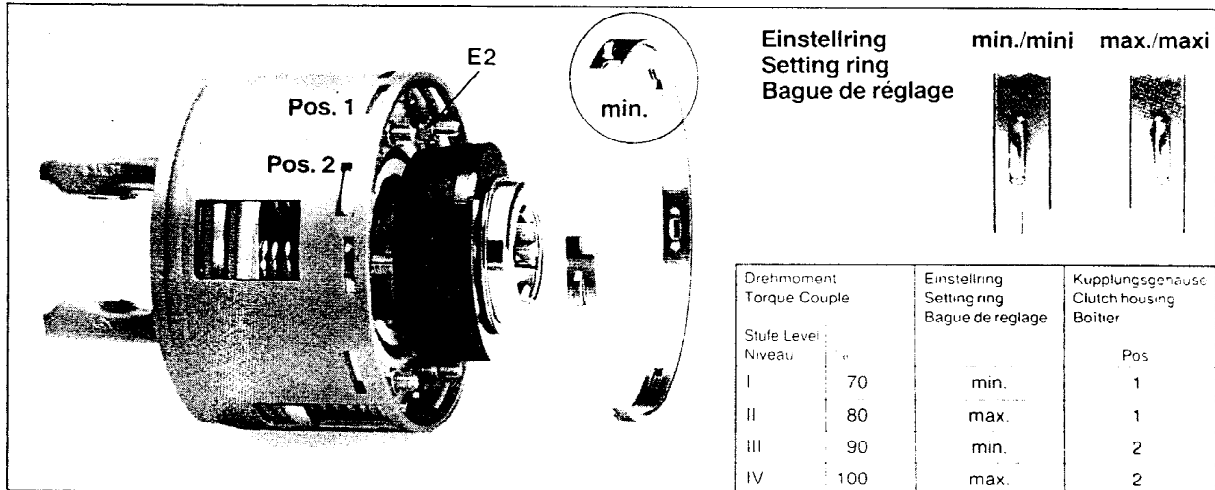


Fig. 3

### Venting the clutch 2600

Prior to first use and after long periods out of use, check functioning of friction clutch. Tighten nuts to relieve friction discs and setting ring. Rotate clutch fully to release galled friction discs, if any. Turn nuts back to end of thread. Clutch is now ready for use.

### Venting the clutch 2500

Release springs (2 Fig. E) completely and rotate clutch fully. Turn nuts back again to original position.

### Automatic Cut Out Clutch (not pictured)

For 1000 rpm. use only

When an overload condition is created, the power flow is interrupted when this occurs. Disengage PTO and lift machine to remove obstruction. Keep engine idling when engaging PTO again. Decrease engine revs. - accelerate - and the Cut Out Clutch will engage automatically again.

### Lubrication

Lubricate with quality grease before starting work and every 8 operating hours (Fig. 4).

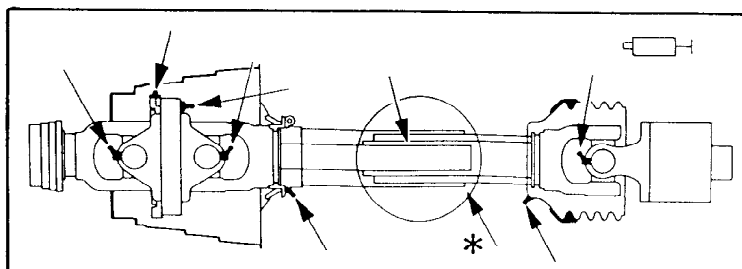


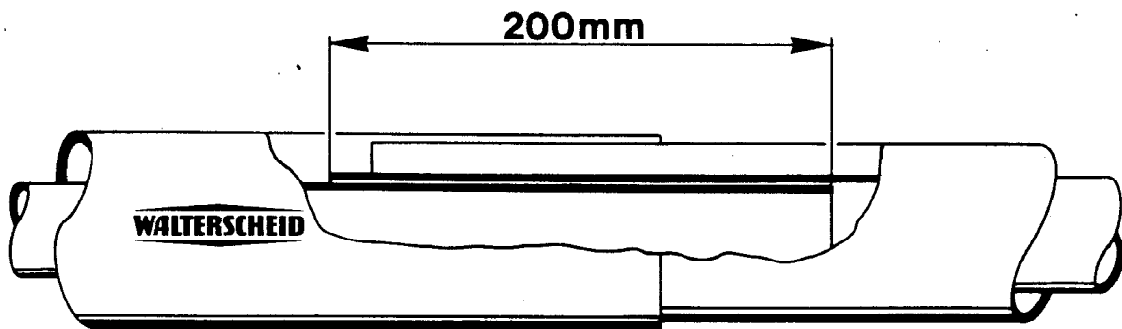
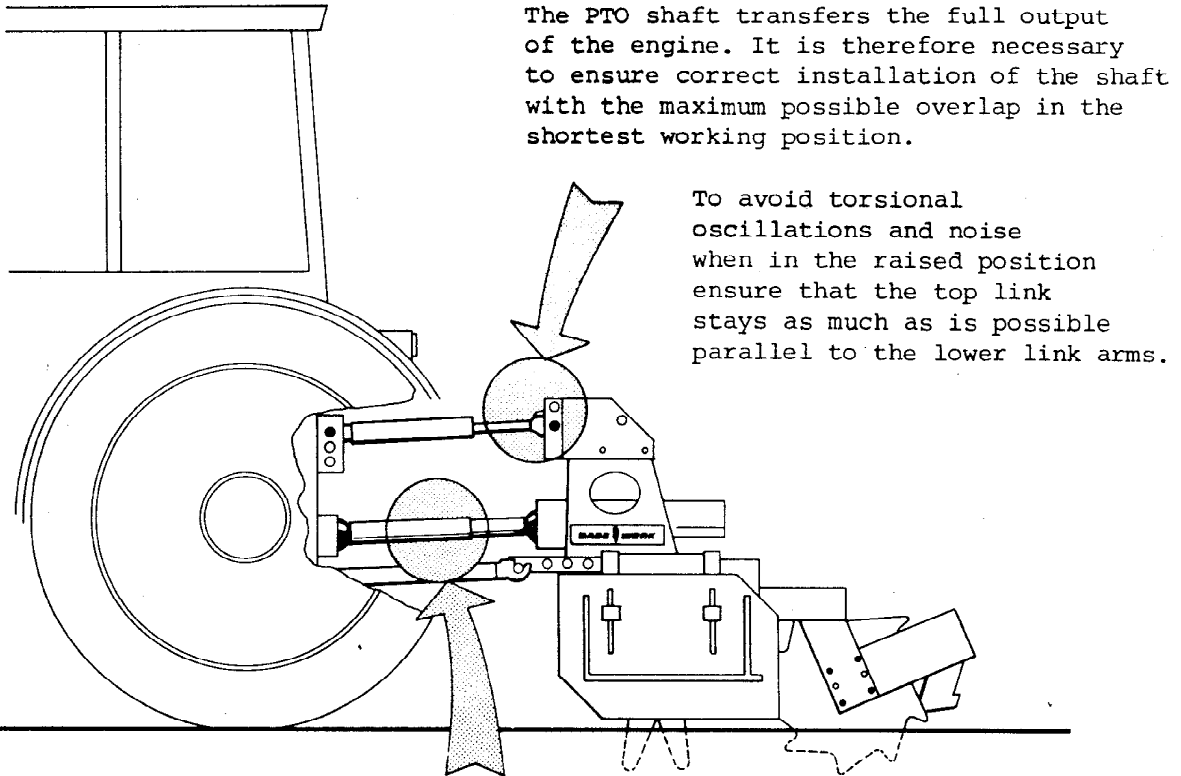
Fig. 4

**IMPORTANT**

Correct use

of Walterscheid PTO drive shafts for

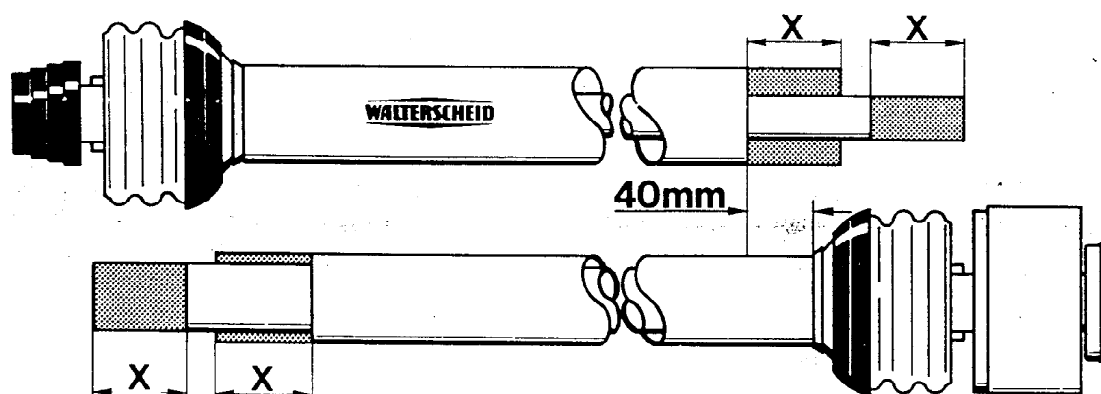
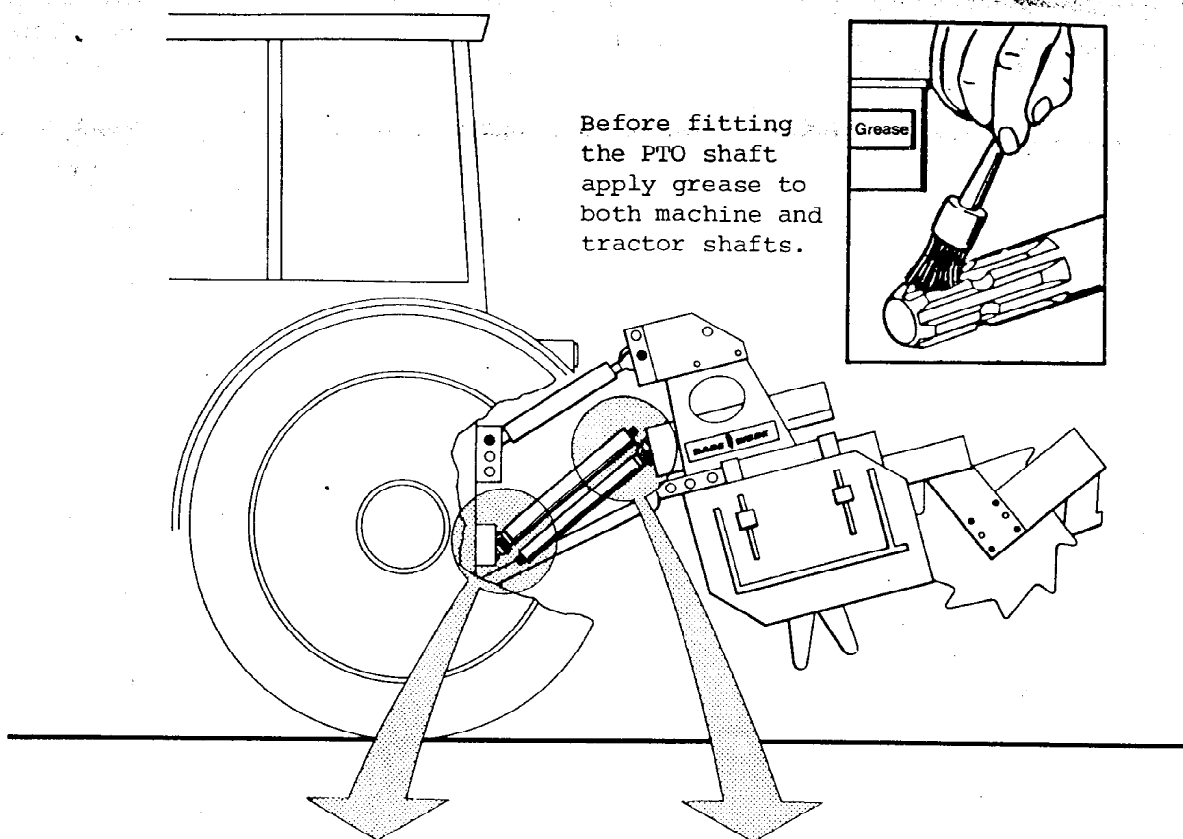
Rabe Rotary Harrows and Tine or Blade rotor Machines.



When in work the minimum overlap of the shaft profiles is 200 m.m. (8ins.) If necessary adjust the crosshaft mounting arms of the harrow. If the minimum overlap is not obtainable a special hub profile PTO shaft is available.

Ensure the Q C key-type lock (machine end) has been correctly fitted, refer to separate instructions provided with the PTO shaft.

Any subsequent damage caused by incorrect installation and mounting of the harrow as well as defective maintenance nullifies the warranty!



Before use check the length of the PTO shaft and adjust if necessary.

1. Hold the half-shafts next to each other in the shortest working position and mark them.
2. Shorten both guard tubes equally (X).
3. Shorten each half of the shaft by the same length as the guard tubes (X).
4. Round off all sharp edges and burrs carefully. Grease both sliding profiles before assembly.



GKN Walterscheid GmbH

**WALTERSCHEID**

**NEU • NEW  
NOUVEAU**

Power Drive  
Gelenkwellen-Baureihe  
P 300 - P 700

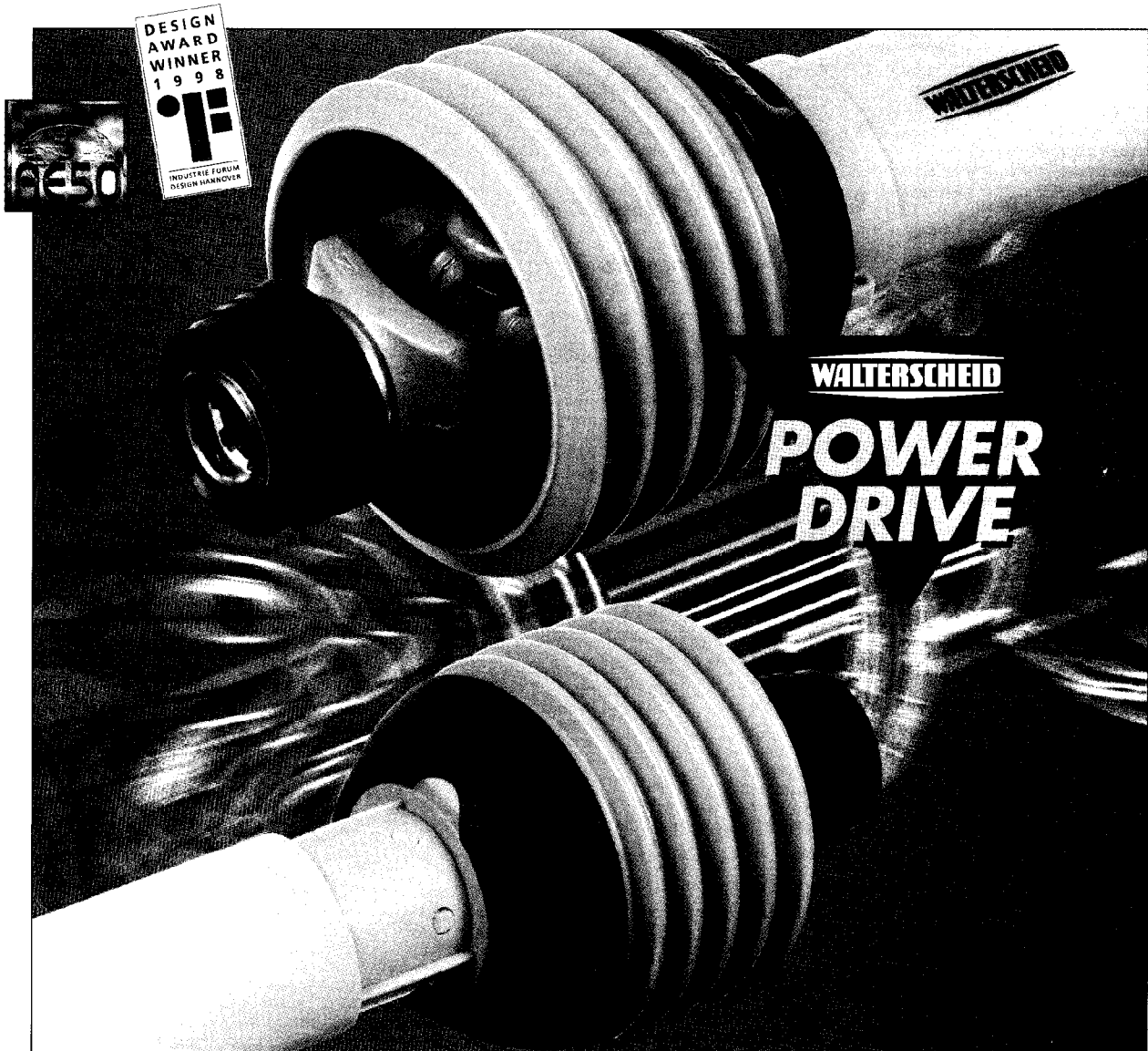
**Wartungsarme  
Gelenkwellen für  
höchste  
Anforderungen**

Power Drive  
PTO Drive Shaft Series  
P 300 - P 700

**Low-maintenance  
PTO drive shafts  
for the toughest  
demands**

Série de transmissions  
Power Drive  
P 300 - P 700

**Transmissions  
pratiquement sans  
entretien pour  
hautes exigences**



Mit der Entwicklung der neuen Power Drive Gelenkwellen-Generation sind insbesondere die deutlich höheren Anforderungen von Großlandwirten und Lohnunternehmern berücksichtigt worden.

Der neue Gelenkwellenschutz setzt in Funktion, Robustheit, Handhabung und Design neue Maßstäbe:

Die Schutztrichter lassen sich für Montage bzw. Wartung der Gelenkwellen leicht axial verschieben. Die integrierte Innenabstützung erlaubt die Verwendung besonders flexibler Trichter in Form und Werkstoff.

Durch profilierte, dickwandige Schutzrohre können sich die beiden Schutzhälften zueinander nicht mehr verdrehen. Die traktorseitige Haltekette wird daher überflüssig. Bei der Vollschutzversion kann auf Haltekettensatz gänzlich verzichtet werden.

Für unterschiedliche Arbeitseinsätze gibt es drei Gelenkwellenbauweisen; diese sind unterteilt nach Wartungsintervallen: 8 Std., 40 Std. und 250 Std. Die technischen Neuerungen bei den Baureihen mit längeren Wartungsintervallen sind die neu entwickelten Schutzlager aus einem Material, welches eine minimale Schmierung benötigt. Das Gelenk ist mit neu entwickelten Kreuzgelenkdichtungen ausgerüstet, die durch Form und Material ein Austreten von Fett bzw. Eindringen von Staub und Schmutz verhindern.

Die Schmierung der Profilrohre erfolgt über einen auf dem Profilrohr angebrachten Schmiernippel (40 Std.).

Bei höheren Anforderungen sorgt ein automatischer Fettspeicher für die Schmierung der Profilrohre (250 Std.). Der Fettspeicher ist im Innenprofil montiert und gibt nur bei rotierender Gelenkwelle eine bestimmte Fettmenge frei.

Spezielle Profilrohrabdichtungen streifen den Schmutz ab und verhindern den bisher üblichen Fettverlust.

Mit der neuen Power Drive Gelenkwellen-Generation wird Walterscheid wichtigen Marktforderungen gerecht: verbesserte Handhabung und minimale Wartung.

The development of the new generation of Power Drive PTO drive shafts caters particularly to the markedly tougher demands of large-scale farmers and contractors.

The new PTO drive shaft guard sets new standards in terms of function, stability, handling and design:

The guard cones can be axially displaced for assembly or maintenance of the PTO drive shaft. The integrated internal reinforcement permits the use of particularly flexible cones as regards their shape and material.

Profiled, thick-walled guard tubes now prevent rotation of the two guard halves in relation to one another. It is thus no longer necessary to install a safety chain on the tractor side - the safety chain can be completely dispensed with in the full-guard version.

There are three PTO drive shaft series for different types of work. They are broken down according to the maintenance intervals of 8 hours, 40 hours and 250 hours. The technical innovation in the series with longer maintenance intervals is the newly developed guard bearing made of a material which requires only minimum lubrication. The joint is equipped with newly designed universal joint seals, whose shape and material prevent grease from escaping and dust and dirt from entering.

The profile tubes are lubricated by a grease nipple mounted on the profile tube (40 hours).

In the case of tougher demands, an automatic grease dispenser ensures lubrication of the profile tubes (250 hours). It is mounted in the inner profile and releases a specific amount of grease only when the shaft is rotating.

Special profile tube seals ward off dirt and prevent the previously customary loss of grease.

With its new generation of Power Drive PTO drive shafts, Walterscheid meets important demands of the market: improved handling and minimum maintenance.

La mise au point de la nouvelle génération de transmissions Power Drive tient particulièrement compte des exigences nettement plus élevées imposées par les gros exploitants agricoles et les entrepreneurs de travaux à façon.

Le nouveau protecteur pour transmissions crée de nouveaux critères de fonctionnement, de robustesse, de maniement et de design:

Les cônes protecteurs sont faciles à déplacer axialement pour le montage et l'entretien de la transmission. Le support intérieur intégré permet d'utiliser des cônes dont la forme et le matériau sont particulièrement flexibles.

Les tubes protecteurs profilés à parois épaisses empêchent que les deux demi-protecteurs tournent l'un par rapport à l'autre. La chaînette de sécurité côté tracteur devient donc inutile. Avec la version "protection intégrale", on peut se dispenser de toute chaînette de sécurité.

Pour les différents types de travail, il existe trois séries de transmission; celles-ci se répartissent en trois périodicités d'entretien de 8 hrs, 40 hrs et 250 hrs. Les innovations techniques des séries ayant des périodicités d'entretien plus longues sont les bagues de logement de conception nouvelle dont le matériau nécessite un graissage minimal. Le joint est équipé de nouvelles garnitures d'étanchéité du croisillon, dont la forme et le matériau empêchent les pertes de graisse ou la pénétration de poussière et de saletés.

Le graissage des tubes profilés est assuré par un graisseur monté sur le tube profilé (40 hrs).

Pour les exigences plus élevées, un distributeur de graisse automatique assure le graissage des tubes profilés (250 hrs). Le distributeur de graisse est monté dans le profil intérieur et ne distribue une quantité de graisse déterminée que lorsque l'arbre est en rotation.

Des bagues d'étanchéité spéciales pour tubes profilés raclett les saletés et empêchent les pertes de graisse, jusqu'à présent courantes.

Avec sa nouvelle génération de transmissions Power Drive, Walterscheid est en mesure de répondre aux importantes exigences du marché: maniement amélioré et entretien minimal.



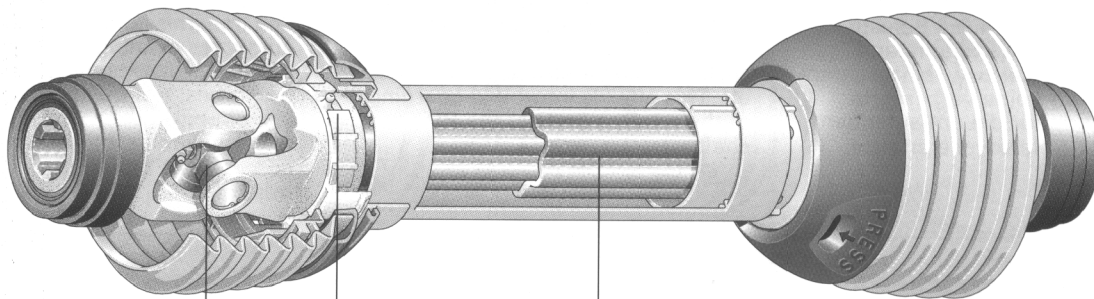
Walterscheid erhielt für die neue Power Drive Gelenkwelle von der American Society of Agricultural Engineers den AE50 AWARD und eine internationale Designauszeichnung für den Gelenkwellenschutz.

Walterscheid received the AE50 AWARD from the American Society of Agricultural Engineers for the new Power Drive PTO drive shaft, and an international design award for the PTO drive shaft guard.

Walterscheid a obtenu le label AE50 AWARD par American Society of Agricultural Engineers pour sa nouvelle transmission Power Drive et une distinction internationale pour le design de son protecteur pour transmission.

Version  
**1**

**Normale Wartung (8 Std.) / Standard maintenance (8 h) / Entretien normal (8 hrs)**



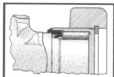
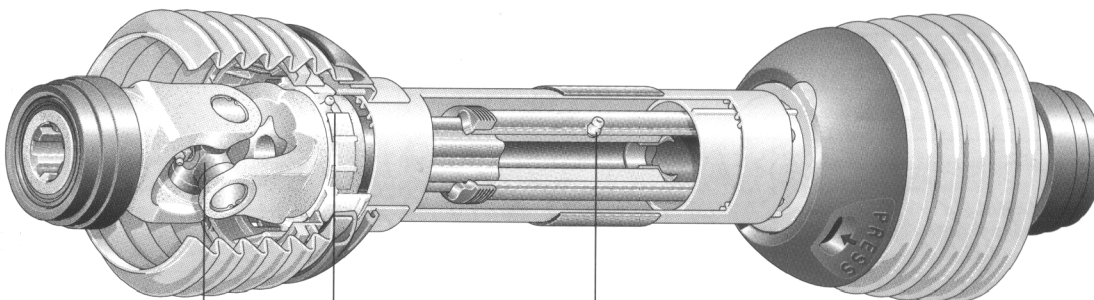
Gelenke, 8 Std.  
Joints, 8 h  
Joints, 8 hrs

Schutzlager, 250 Std.  
Guard bearing, 250 h  
Bague de logement, 250 hrs

Profilrohre, 8 Std.  
Profile tubes, 8 h  
Tubes profilés, 8 hrs

Version  
**2**

**Monatliche Wartung (40 Std.) / Monthly maintenance (40 h) / Entretien mensuel (40 hrs)**



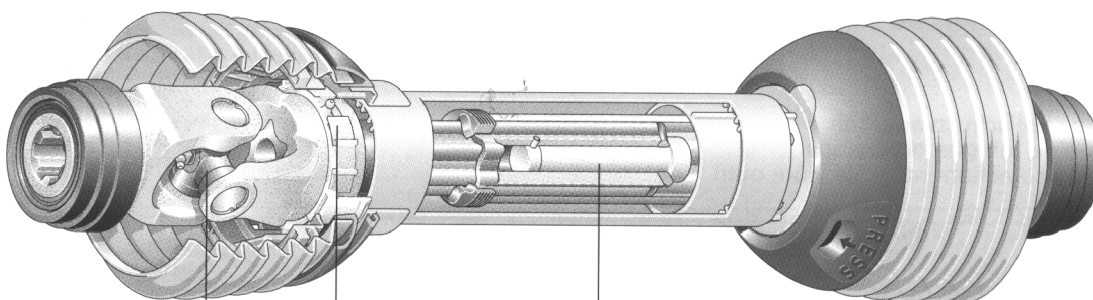
Gelenke, 250 Std.  
Joints, 250 h  
Joints, 250 hrs

Schutzlager, 250 Std.  
Guard bearing, 250 h  
Bague de logement, 250 hrs

Profilrohre mit Schmiernippel und Dichtungen, 40 Std.  
Profile tubes with grease nipple and seals, 40 h  
Tubes profilés avec graisseur et garnitures d'étanchéité, 40 hrs

Version  
**3**

**Saisonale Wartung (250 Std.) / Seasonal maintenance (250 h) / Entretien saisonnier (250 hrs)**



Gelenke, 250 Std.  
Joints, 250 h  
Joints, 250 hrs

Schutzlager, 250 Std.  
Guard bearing, 250 h  
Bague de logement, 250 hrs

Profilrohre mit autom. Fettspender und Dichtungen, 250 Std.  
Profile tubes with automatic grease dispenser and seals, 250 h  
Tubes profilés avec distributeur automatique de graisse et garnitures d'étanchéité, 250 hrs

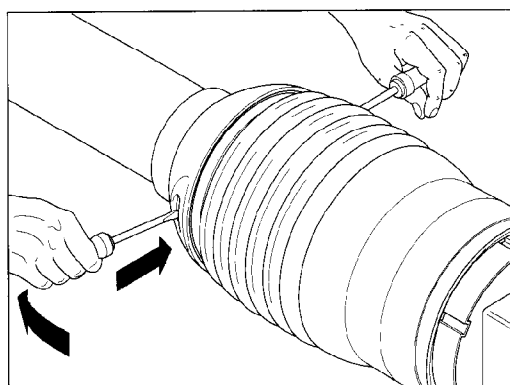
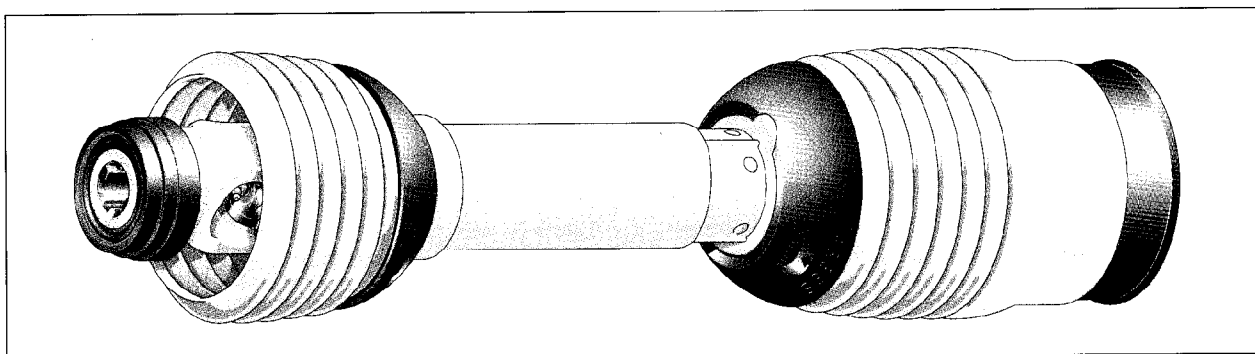
Wartungsintervalle (Std.) / Maintenance intervals (h) / Périodicités d'entretien (hrs)

	Gelenke / Joints / Joints	Schutzlager / Guard bearing / Bague de logement	Profilrohre / Profile tubes / Tubes profilés
Version 1	8	250	8
Version 2	250	250	40
Version 3	250	250	250

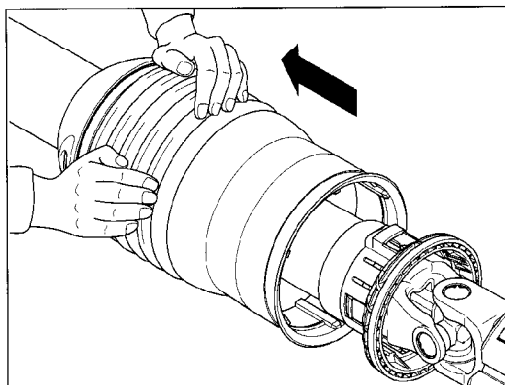
Neben dem Wegfall der Haltekette ermöglicht die neue Vollschutzversion (geräteseitig) in vielen Anwendungsfällen eine komplette Abdeckung der Gelenkwelle, ohne die Handhabungsvorteile durch zusätzliche Befestigungselemente, wie Spannband, Schrauben, Stecker usw. einzuschränken. Damit wird eine verbesserte Schutzwirkung für die umlaufenden Bauteile der Gelenkwelle erreicht.

In addition to eliminating the safety chain, the new full-guard version (implement side) also makes it possible to completely cover the PTO drive shaft in many applications, without restricting the handling advantages with additional mounting elements, such as retainer straps, screws, pins, etc. This affords improved guarding of the rotating parts of the PTO drive shaft.

En dehors de la suppression de la chaînette de sécurité, la nouvelle version de la protection intégrale (côté outil) permet dans de nombreux cas d'application une couverture complète des transmissions, sans limiter pour autant les avantages de maniement par des éléments de fixation supplémentaires, tels que bande de serrage, vis, goupilles etc. On obtient ainsi une meilleure protection pour les composants tournants des transmissions.

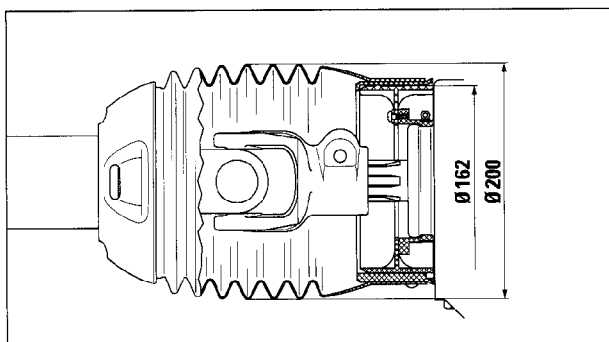


Beide Sperren mit Werkzeug lösen.  
 Undo both locks with tool.  
 Désolidariser les deux came à l'aide d'un outil.

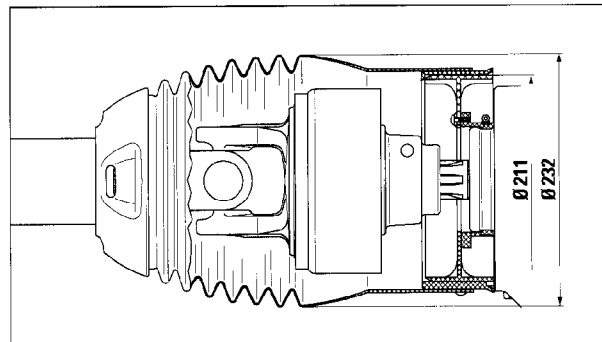


Vollschutztrichter zurückziehen.  
 Push back the full-guard cone.  
 Repousser le cône de protection intégrale.

Geräteseitige Vollschutzvarianten  
 Implement-side full-guard versions  
 Variantes de protection intégrale, côté outil

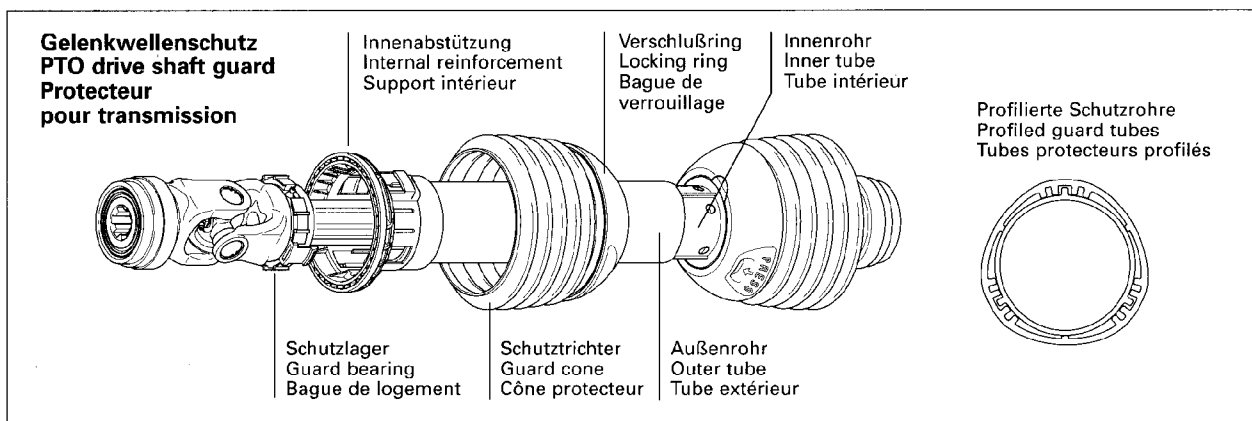


Standard-Gelenkwelle  
 Standard PTO drive shaft  
 Transmission standard



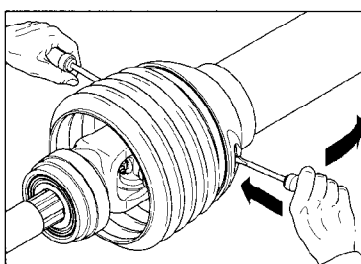
Gelenkwelle mit Überlastkupplung  
 PTO drive shaft with overload clutch  
 Transmission avec limiteur de couple



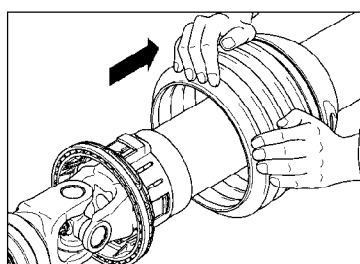


# Montageanleitung / Assembly instructions / Instructions pour le montage

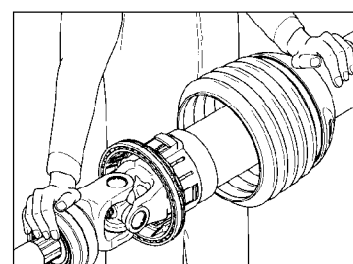
## Demontage / Dismantling Démontage



Beide Sperren mit Werkzeug lösen.  
Undo both locks with tool.  
Désolidariser les deux came à l'aide d'un outil.

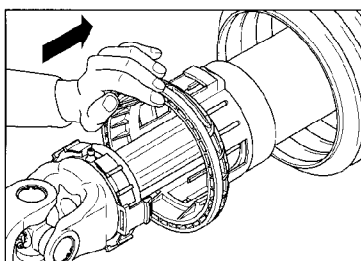


Schutztrichter zurückschieben.  
Push back guard cone.  
Repousser le cône protecteur.

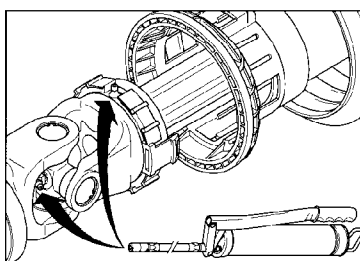


Komfortabler Freiraum für alle Gelenkwellen-  
Schnellverschlüsse beim An- und Abkuppeln.  
Ample space for all PTO drive shaft quick-dis-  
connect locks when coupling and uncoupling.  
Espace libre confortable pour tous les  
verrouillages rapides de transmissions pour  
l'attelage et le dételage.

## Wartung / Maintenance Entretien

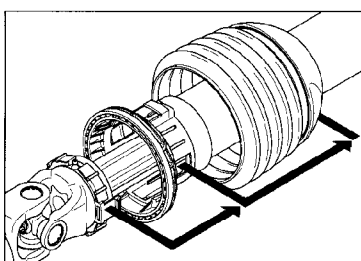


Schutzhälfte mit Innenabstützung durch leichten  
Schlag, evtl. Hammer, lösen und abziehen.  
Release and remove guard half and internal support  
with a gentle knock, using a hammer if neces-  
sary.  
Désolidariser et retirer le demi-protecteur avec  
son support intérieur en donnant de légers coups,  
éventuellement de marteau.

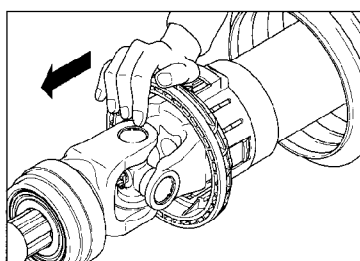


Komfortabler Freiraum bei der Wartung.  
Ample space during maintenance.  
Espace libre confortable pour l'entretien.

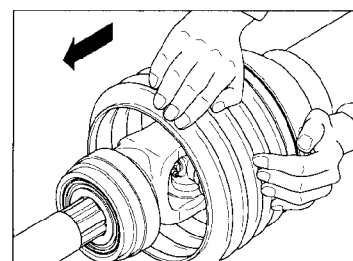
## Montage / Assembly Montage



Wichtig! Gleitring, Kappe und Verschlussring in  
richtige Montageposition drehen.  
Important! Turn sliding ring, cap and locking ring  
into the correct position for assembly.  
Important! Tourner la bague de glissement, le  
carter et la bague de verrouillage dans la bonne  
position de montage.

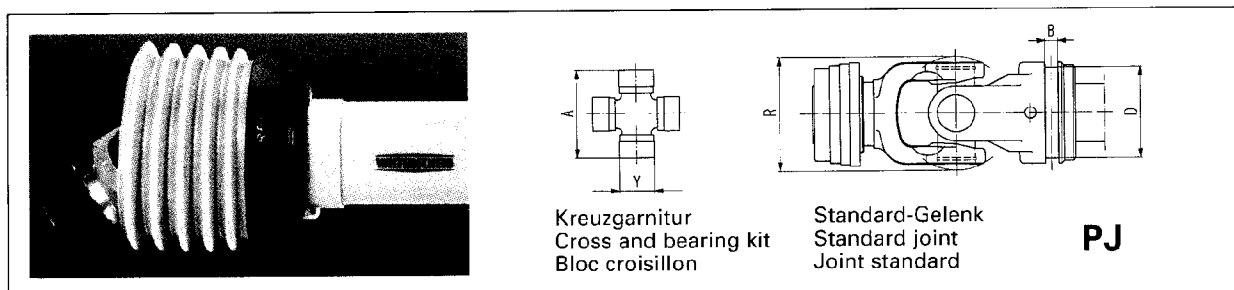


Schutzhälfte aufschieben und mit leichtem Schlag  
Innenabstützung auf Schutzlager arretieren.  
Slide on guard half and lock internal  
reinforcement in place on guard bearing with a  
gentle knock.  
Engager le demi-protecteur et bloquer le support  
intérieur contre la bague de logement en donnant  
de légers coups.



Schutztrichter bis zum automatischen Einrasten  
aufschieben.  
Slide on guard cone until it engages automatically.  
Engager le cône protecteur jusqu'à ce qu'il s'en-  
cliquette automatiquement.

Gelenkwellen-Baugrößen - Maßtabelle  
 PTO drive shaft sizes - Table of dimensions  
 Types de transmission - Tableau des cotes



Baugröße Size Type	A (mm)	Y (mm)	B (mm)	ø D (mm)	Rotations-ø Swing diameter ø rotation R (mm)
PJ 300	75	27	11	76,5	92
PJ 400	76	32	11	76,5	95
PJ 500	89	36	11	76,5	108
PJ 600	104	42	16	93,5	125
PJ 700	118	50	16	93,5	145

Gelenkwellen-Baugrößen - Leistungstabelle  
 PTO drive shaft sizes - Table of power ratings  
 Types de transmission - Tableau des puissances

**Berechnungsbasis:**  
**Basis of calculation:**  
**Base de calcul:**

① Standard-Gelenk  
 Standard joint  
 Joint standard

Beugungswinkel 5° - Lebensdauer 1000 Std.  
 Joint angle 5° - Life 1000 h  
 Angle 5° - Durée de vie 1000 hrs

② Standard-Gelenk  
 Standard joint  
 Joint standard

Beugungswinkel 10° - Lebensdauer 100 Std.  
 Joint angle 10° - Life 100 h  
 Angle 10° - Durée de vie 100 hrs



Baugröße Size Type	Grenzwerte Limit values Valeurs limites		Dynamische Kapazität / Dynamic capacity / Capacités dynamiques			
			①		②	
			540 min <sup>-1</sup> 1000 min <sup>-1</sup>		540 min <sup>-1</sup> 1000 min <sup>-1</sup>	
	Ms [Nm] (inlb)	Mp [Nm] (inlb)	P [kW] (PS/HP/ch)	Mn [Nm] (inlb)	P [kW] (PS/HP/ch)	Mn [Nm] (inlb)
PJ 300	840 (7435)	2350 (20800)	28 (38) 44 (60)	500 (4420) 415 (3675)	45 (61) 69 (94)	790 (6995) 660 (5840)
PJ 400	1240 (10975)	3800 (33630)	39 (53) 61 (83)	695 (6150) 580 (5130)	62 (85) 96 (131)	1100 (9740) 915 (8100)
PJ 500	2150 (19030)	6000 (53100)	66 (90) 102 (139)	1175 (10400) 975 (8630)	105 (143) 162 (220)	1860 (16460) 1545 (13670)
PJ 600	2895 (25620)	7800 (69030)	79 (107) 122 (166)	1400 (12390) 1165 (10310)	125 (170) 193 (263)	2215 (19605) 1840 (16285)
PJ 700	4530 (40090)	10600 (93810)	119 (162) 182 (248)	2095 (18540) 1740 (15400)	188 (256) 289 (393)	3320 (29380) 2760 (24420)

Maßtabelle - Schiebeprofile      Zuordnung - Schiebeprofile / Gelenkwellenschutz  
 Table of dimensions - Telescopic sections      Allocation - Telescopic sections / PTO drive shaft guard  
 Tableau des cotes - Profils coulissants      Correspondance - Profils coulissants / Protecteur pour transmission

	Rohrprofile / Profile tubes / Tubes profilés										Nabenprofile / Profile sleeves Embouts profilés	
Profile Profiles Profils	1b/2a	1bGA/2aG	S4LH/S5	S4/S5	S4GA/S5	S5H/S6	40 x 36 (20) H	52 x 47 (25) H				
r [mm]	49	57,5	49	57,5	51	61	51	61	61	71,5	62	75
d [mm]	39,5	48	39,5	48	37	47	37	47	47	57,5	40	52
s [mm]	4,5	4,0	4,5	3,5	6,0	4,5		4,5	4,5	5,0	100	120
Schutz Guard Protecteur	PG20	PG20	PG20	PG20	PG20	PG30	PG20	PG30			PG20	PG30

Zuordnung - Gelenkwellen-Baugröße / Schiebeprofile / Gelenkwellenschutz  
 Allocation - PTO drive shaft size / Telescopic sections / PTO drive shaft guard  
 Correspondance - Type de transmission / Profils coulissants / Protecteur pour transmission

	Rohrprofile / Profile tubes / Tubes profilés						Nabenprofile Profile sleeves Embouts profilés	
	1b/2a	1bGA/2aG	S4LH/S5	S4/S5	S4GA/S5	S5H/S6	40 x 36 (20) H	52 x 47 (25) H
Schutz Guard Protecteur	PG20	PG20	PG20	PG20	PG20	PG30	PG20	PG30
Baugröße Size / Type	P 300	•	•					
	P 400	•	•	•			•	
	P 500			•	•		•	
	P 600					•		•
	P 700							•

Leistungstabelle - Schiebeprofile  
 Table of power ratings - Telescopic sections  
 Tableau des puissances - Profils coulissants

Rohrprofile Profile tubes Tubes profilés	Mp		Schiebekraft/Drehmoment Thrust force/Torque Effort au coulissement/Couple N/Nm	
	[Nm]	(inlb)	Profile gefettet Lubricated shaft sections Profils graissés	GA Profile gefettet Lubricated shaft sections Profils graissés
1b/2a	2300	(20355)	9	
1bGA/2aG	2300	(20355)		6
S4LH/S5	3000	(26550)	8	
S4/S5	3000	(26550)	6,5	
S4GA/S5	3000	(26550)		4,5
S5H/S6	6000	(53100)	7,5	
Nabenprofile Profile sleeves Embouts profilés				
40 x 36 (20) H	3400	(30090)	7	
52 x 47 (25) H	6000	(53100)	7	

GA = Oberfläche beschichtet  
 GA = Coated surface  
 GA = Traitement spécial de surface

G = Spezialaußenprofil für beschichtetes Innenprofil  
 G = Special outer profile for coated inner profile  
 G = Profil extérieur spécial pour profil intérieur avec traitement de surface

H = gehärtet  
 H = hardened  
 H = trempé

Kupplungszuordnung zur Baugröße  
Allocation of clutches and sizes  
Correspondances des limiteurs et types

Baugröße / Size / Type		P 300	P 400	P 500	P 600	P 700
Typ / Type / Désignation						
Sperrkörperkupplungen Ratchet clutches Limiteurs de couple à cames	K32B	•				
	K32M	•				
	K33B	•	•			
	K33M	•	•			
	K34B	•	•	•		
	K34M	•	•	•		
Abschaltende Kupplungen Cut-out clutches Limiteurs débrayables	KB61/20	•	•	•		
	KB61/30				•	
	K62/1	•	•			
	K62/2	•	•	•		
	K64/1	•	•			
	K64/2	•	•	•	•	
Reibkupplungen Friction clutches Limiteurs à friction	K92	•	•			
	K92/4	•	•	•		
	K92E	•	•			
	K92/4E	•	•	•		
	K96	•	•			
	K96/4	•	•	•	•	
	K97/4				•	•
Elastische Kupplungen Elastic clutches Limiteurs élastiques	K65/2	•	•			
	K65/TR2	•				
	K65/TR3	•	•			
	K65/TR4	•	•	•		
	K65/TR5	•	•	•		
Freilaufkupplungen / Overrunning clutches Roues libres	F5/1	•	•	•		
	F5/2			•	•	•
Kombinierte Kupplungen Combined clutches Limiteurs combinés	FK96	•	•			
	FK96/4	•	•	•	•	
	PFK96	•	•			
	PFK96/4	•	•	•	•	
	FK97/4				•	•

Daten siehe Techn. Handbuch 410 / Data see Technical Manual 410 / Données voir manuel technique 410

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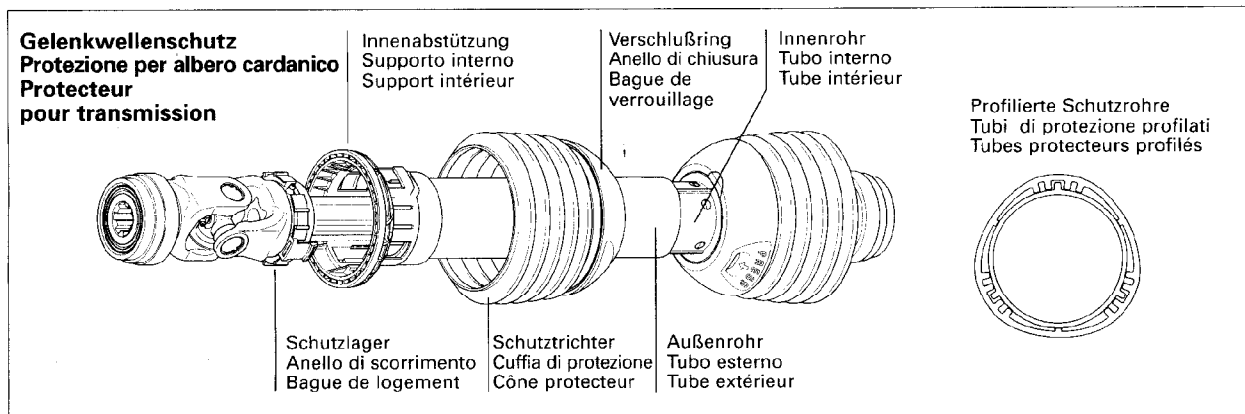
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**Power Drive**  
**Gelenkwellen-Baureihe**  
**P 300 - P 500 mit Schutz PG 20**  
**P 600 - P 700 mit Schutz PG 30**

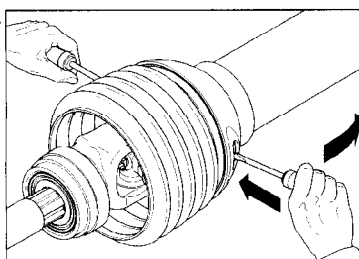
**Power Drive**  
**PTO Drive Shaft Series**  
**P 300 - P 500 with guard PG 20**  
**P 600 - P 700 with guard PG 30**

**Série de transmissions**  
**Power Drive**  
**P 300 - P 500 avec la protection PG 20**  
**P 600 - P 700 avec la protection PG 30**

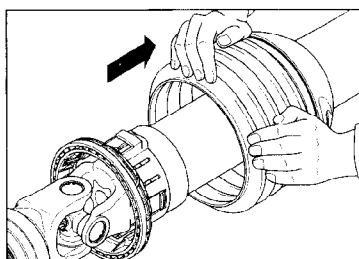


### Montageanleitung / Istruzioni per il montaggio / Instructions pour le montage

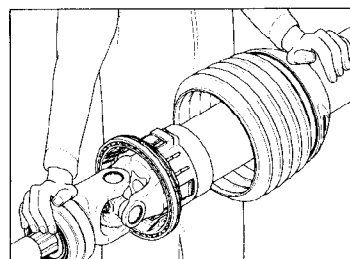
#### Demontage / Smontaggio Démontage



Beide Sperren mit Werkzeug lösen.  
 Allentare entrambi i dispositivi di bloccaggio con un utensile.  
 Désolidariser les deux comes à l'aide d'un outil.

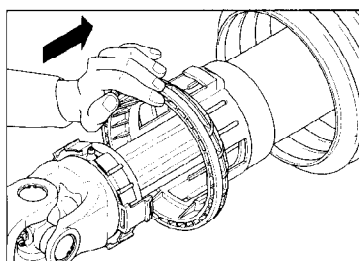


Schutztrichter zurückschieben.  
 Arretrare la cuffia di protezione integrale.  
 Repousser le cône protecteur.

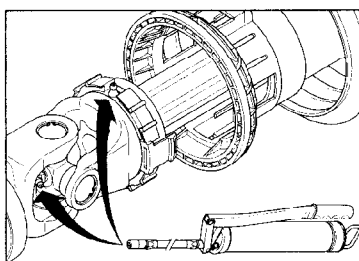


Komfortabler Freiraum für alle Gelenkwellen-Schnellverschlüsse beim An- und Abkuppeln.  
 Spazio libero confortevole per l'aggancio e lo sgancio di tutti gli attacchi rapidi degli alberi cardanici.

#### Wartung / Manutenzione Entretien

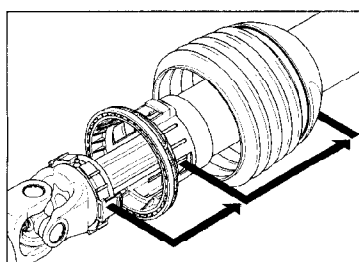


Schutzhälfte mit Innenabstützung durch leichten Schlag, evtl. Hammer, lösen und abziehen.  
 Sbloccare ed arretrare con un leggero colpo la semiprotezione e l'anello di supporto utilizzando, se necessario, un martello.  
 Désolidariser et retirer le demi-protecteur avec son support intérieur en donnant de légers coups, éventuellement de marteau.

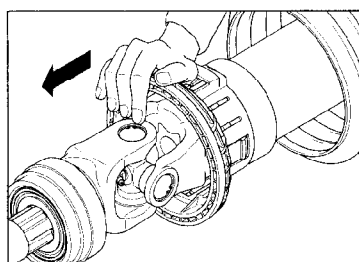


Komfortabler Freiraum bei der Wartung.  
 Spazio libero confortevole per la manutenzione.  
 Espace libre confortable pour l'entretien.

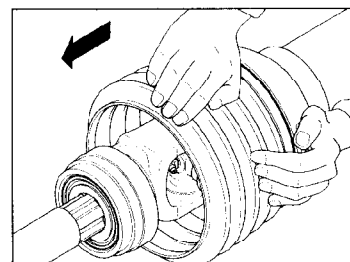
#### Montage / Montaggio Montage



Wichtig! Gleitring, Kappe und Verschlußring in richtige Montageposition drehen.  
 Importante! Ruotare l'anello di scorrimento, la calotta e l'anello di chiusura nella corretta posizione di montaggio.  
 Important! Tourner la bague de glissement, le carter et la bague de verrouillage dans la bonne position de montage.



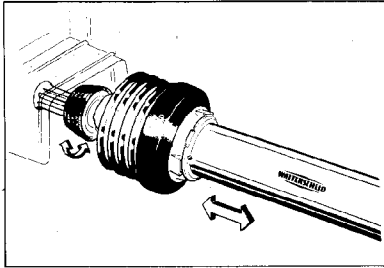
Schutzhälfte aufschieben und mit leichtem Schlag Innenabstützung auf Schutzlager arretieren.  
 Spingere in avanti la semiprotezione e bloccare con un leggero colpo l'anello di chiusura sull'anello di scorrimento.  
 Engager le demi-protecteur et bloquer le support intérieur contre la bague de logement en donnant de légers coups.



Schutztrichter bis zum automatischen Einrasten aufschieben.  
 Spingere la cuffia di protezione sino a che s'incastra automaticamente.  
 Engager le cône protecteur jusqu'à ce qu'il s'encliquette automatiquement.

## Bedienungsanleitung / Operating instructions / Mode d'emploi

### QS-Schnellverschluß / QS-lock / Verrouillage QS



#### Achtung!

- Der QS-Verschluß nutzt die Profillänge von 38 mm ab Mitte Ringnut bis zum Profilauslauf der international genormten Zapfwellen aus.  
Beim Ankuppeln der Gelenkwelle prüfen, ob QS-Verschluß fest auf der Zapfwelle sitzt.  
**QS-Verschluß ist dann sicher eingerastet, wenn die Ziehülse sich frei drehen läßt.**  
(Bei fehlendem Freiraum Aufsteckgabel mit Schiebepfiff verwenden.)

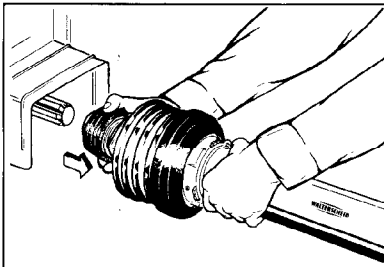
#### Attention!

- The QS-lock utilizes the profile length of 38 mm from the center of the bearing groove to the spline end of the PTO shafts as standardized on international scale.  
When connecting the PTO drive shaft, make sure that the QS-lock fits tightly on the PTO shaft.  
**QS-lock is fully engaged if collar can be rotated freely.**  
(Use q.-d. yoke in case of limited space available.)

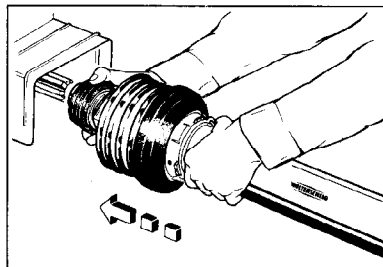
#### Attention !

- Le verrouillage QS utilise la longueur profilée de 38 mm entre le centre de la rainure annulaire et la fin du profil des PTO normalisées sur le plan international.  
Vérifier que, lors de l'accouplement de la transmission, le verrouillage QS est correctement enclenché sur la PTO. **Celui-ci est complètement enclenché, lorsque la bague est libre en rotation.**  
(En cas d'un manque d'espace, utiliser une mâchoire à verrouillage rapide.)

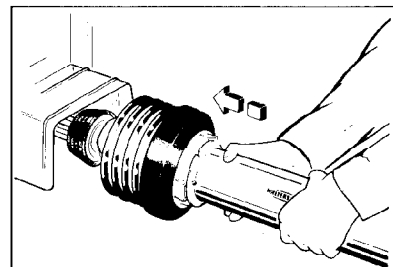
### Ankuppeln – Coupling – Accouplement



- Ziehülse zurückziehen, bis sie in geöffneter Stellung stehen bleibt.  
Ziehülse ist dann drehfest mit der Gelenkwelle verbunden.
- Retract collar, until it remains in the open position.  
Collar cannot be rotated on PTO drive shaft.
- Retirer le manchon jusqu'à ce qu'il reste en position ouverte.  
Manchon et transmission sont maintenant solidaires.

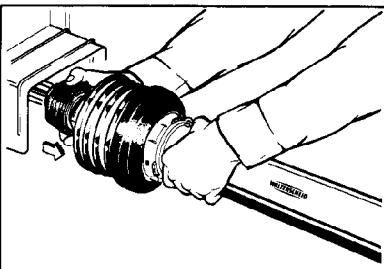


- Gelenkwelle auf Zapfwelle aufstecken. Zur Findung der Profile kann Gelenkwelle mit der drehfesten Ziehülse in die richtige Kuppelposition gebracht werden.
- Push PTO drive shaft onto PTO shaft.  
To align splines, the collar, which is unable to rotate, may be used to turn the PTO drive shaft into the appropriate coupling position.
- Engager la transmission sur la PTO.  
Pour l'alignement des profils, la transmission peut être tournée à sa position correcte d'accouplement à l'aide du manchon immobilisé dans sa position armée.

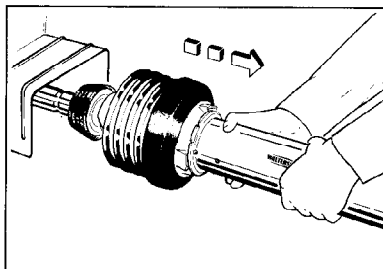


- Gelenkwelle soweit aufstecken, bis QS-Verschluß automatisch einrastet. **Danach muß die Ziehülse frei drehbar sein.**
- Push PTO drive shaft further, until QS-lock is automatically engaged. **Collar must now be able to rotate freely.**
- Engager la transmission jusqu'à ce que le verrouillage QS s'enclenche automatiquement. **Le manchon doit alors être libre en rotation.**

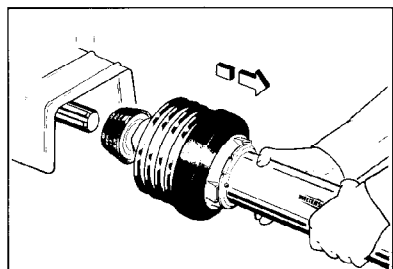
### Abkuppeln – Uncoupling – Désaccouplement



- Ziehülse zurückziehen, bis sie in geöffneter Stellung stehen bleibt.
- Retract collar, until it remains in the open position.
- Retirer le manchon jusqu'à ce qu'il reste en position ouverte.



- Gelenkwelle am Schutzrohr fassen und zurückziehen. Kugeln lösen sich aus der Ringnut.
- Hold PTO drive shaft at guard tube and retract it. Balls are removed from annular groove.
- Prendre la transmission au niveau du tube protecteur et la retirer. Les billes sont retirées de la rainure annulaire.



- Gelenkwelle von Zapfwelle abziehen.
- Retract PTO drive shaft from PTO shaft.
- Retirer la transmission de la PTO.

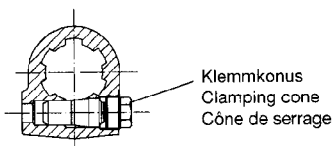
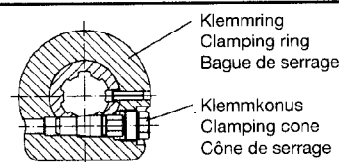
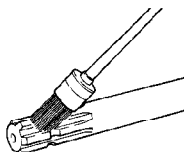


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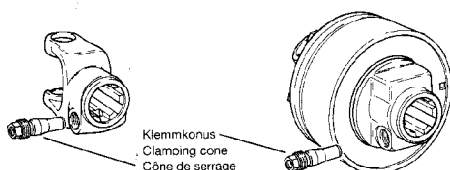
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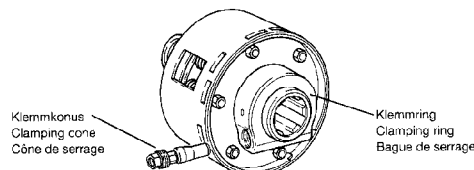
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**Bedienungsanleitung / Operating instructions / Mode d'emploi****CC-Klemmkonus-Verschluß / CC-clamping cone lock / Verrouillage par cône de serrage****Podestversion  
Boss variant  
Version à bosse****Ringversion  
Ring variant  
Version à bague****Ankuppeln / Coupling / Accouplement**

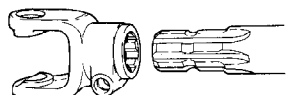
Profil der Anschlußwelle reinigen und fetten.  
Clean and grease the connecting shaft profile.  
Nettoyer et graisser le profil de l'arbre d'accouplement.



Klemmkonus lösen und herausdrehen.  
Slacken clamping cone and turn it out.  
Relâcher le cône de serrage et le dévisser.



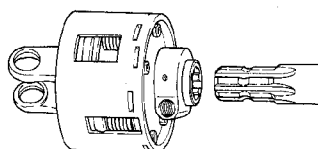
Klemmkonus lösen und aus Klemmring herausnehmen.  
Slacken clamping cone and remove it from clamping ring.  
Relâcher le cône de serrage et l'enlever de la bague de serrage.



Kupplung bzw. Aufsteckgabel auf Anschlußwelle schieben. Hierbei die Aufnahmebohrung für den Klemmkonus über der Ringnut der Anschlußwelle positionieren. Klemmkonus in Aufnahmebohrung eindrehen und unter leichtem axialem Hin- und Herbewegen der Nabe bzw. der Aufsteckgabel fest anziehen (ca. 100 Nm). Festen und sicheren Sitz der Kupplungsnabe bzw. Aufsteckgabel durch Zug- und Druckbewegungen überprüfen. Während der Arbeit ist in regelmäßigen Abständen der sichere Sitz der Kupplung bzw. der Aufsteckgabel zu kontrollieren.

Slide clutch or clamp yoke on the connecting shaft. Make sure that the location hole for the clamping cone is positioned above the annular groove of the connecting shaft. Screw clamping cone into location hole and drive it home (approx. 100 Nm) slightly moving hub or clamp yoke to and fro. Check tight and safe fit of the clutch hub or clamp yoke by application of tension and pressure. During operation, check safe fit of clutch or clamp yoke at regular intervals.

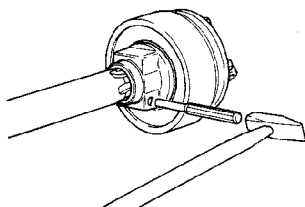
Emmancher le limiteur ou la mâchoire de serrage sur l'arbre d'accouplement. Veiller à ce que le logement pour le cône de serrage soit positionné en dessus de la rainure annulaire de l'arbre d'accouplement. Visser le cône de serrage dans son logement et le serrer à fond (env. 100 Nm) tout en actionnant d'un mouvement alternatif et axial le moyeu ou la mâchoire de serrage. Par un effort traction-compression, vérifier le positionnement sûr et fixe du moyeu ou de la mâchoire de serrage. Il convient de contrôler, à des intervalles réguliers, la fixation sûre du limiteur ou de la mâchoire de serrage pendant leur utilisation.



Kupplung zusammen mit dem auf der Kupplungsnabe montierten Klemmring auf die Antriebswelle schieben und Aufnahmebohrung für den Klemmkonus über der Ringnut positionieren. Klemmkonus in Aufnahmebohrung des Klemmringes eindrehen und unter axialem Hin- und Herbewegen der Kupplung fest anziehen (ca. 100 Nm). Festen und sicheren Sitz der Kupplungsnabe durch Zug- und Druckbewegungen überprüfen. Während der Arbeit ist in regelmäßigen Abständen der sichere Sitz der Kupplung zu kontrollieren.

Slide clutch together with the clamping ring fitted to the clutch hub onto the drive shaft and position the location hole for the clamping cone above the annular groove. Screw clamping cone into the location hole of the clamping ring and drive it home (approx. 100 Nm) moving the clutch to and fro. Check tight and safe fit of the clutch hub by application of tension and pressure. During operation, check safe fit of the clutch at regular intervals.

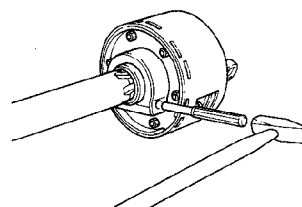
Emmancher le limiteur et la bague de serrage déjà montée sur le moyeu du limiteur sur l'arbre d'entraînement et positionner le logement pour le cône de serrage en dessus de la rainure annulaire. Visser le cône de serrage dans le logement de la bague de serrage et le serrer à fond (env. 100 Nm) tout en actionnant le limiteur d'un mouvement alternatif et axial. Par un effort de traction-compression, vérifier le positionnement sûr et fixe du moyeu du limiteur. Il convient de contrôler, à des intervalles réguliers, la fixation sûre du limiteur pendant son utilisation.

**Abkuppeln / Uncoupling / Désaccouplement**

Klemmkonus lösen und aus Kupplungsnabe bzw. Aufsteckgabel herausnehmen. Falls dies von Hand nicht möglich ist, kann der Klemmkonus auch mit Hilfe eines Hammers und eines Splinttreibers von der Gegenseite herausgeschlagen werden.

Slacken clamping cone and remove it from clutch hub or clamp yoke. If the clamping cone cannot be removed by hand, removal from the opposite side is also possible with the aid of a hammer and pin punch.

Relâcher le cône de serrage et l'enlever du moyeu du limiteur ou de la mâchoire de serrage. Si le cône de serrage ne s'enlève pas à la main, on peut utiliser également un marteau et un chasse-goupilles pour le repousser par le côté opposé.



Klemmkonus lösen und aus dem Klemmring herausnehmen. Falls dies von Hand nicht möglich ist, kann der Klemmkonus auch mit Hilfe eines Hammers und eines Splinttreibers von der Gegenseite herausgeschlagen werden.

Slacken clamping cone and remove it from clamping ring. If the clamping cone cannot be removed by hand, removal from the opposite side is also possible with the aid of a hammer and pin punch.

Relâcher le cône de serrage et l'enlever de la bague de serrage. Si le cône de serrage ne s'enlève pas à la main, on peut utiliser également un marteau et un chasse-goupilles pour le repousser par le côté opposé.